UWB and Other Unlicensed Devices:
Learning more about Technical Performance Alongside C-Band

Coalition of C-Band Constituents

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Background

FCC has authorized new devices to operate on an unlicensed basis, incorporating low power UWB technology[a]

- Portions of UWB spectrum overlap C-band frequency used by FSS downlinks (reception)
- Some limitations were established to protect GPS

FCC has initiated a NOI on the use of unlicensed devices in Extended C-Band[b]

- Extended C-Band is adjacent to C-Band frequency used by standard FSS downlink facilities

[a] MOO and FNPRM in the Matter of Revision of Part 15 of the Commission's Rules Regarding Ultra-Wideband Transmission Systems (ET Docket 98-153), adopted February 13, 2002; Released March 12, 2003.

[b] NOI in the Matter of Additional Spectrum for Unlicensed Devices Below 900 MHz and in the 3 GHz Band (ET Docket 02-380), adopted December 11, 2002, released December 20, 2002.

Equipment Performance Merits Further Study

New devices operating on an unlicensed basis in the UWB spectrum present an exciting opportunity for innovation, but these will be products without a history of technical performance

It is important to understand the facts before new equipment is deployed

The FCC Has Committed to Further Studies of Technical Performance

"work with the FSS industry in developing an appropriate plan to perform other interference tests of UWB devices, including their potential impact on reception of satellite signals."

"If [the FCC's] tests or other sources provide any indications that [the FCC's] standards are not adequate to protect any of the authorized radio services from harmful interference, [the FCC] will take appropriate action to protect those services."

(¶ 131, MOO and FNPRM)

C-Band is the Primary Video Distribution Backbone

C-Band is the primary means of delivering news, sports, information, and entertainment programming to MVPDs and, ultimately, to all US television viewers

C-Band Usage Has Many Stakeholders

- Cable Networks
- Broadcast Networks
- Satellite Operators
- US Television Viewers

The Coalition Member Companies

A&E
CBS
C-Span
Discovery
E!
Fox Network
Fox Cable
HBO
iNDemand
Lifetime
Loral Skynet
MTV
PanAmSat
Scripps Networks
SES Americom
Showtime
Starz!
USA
Warner Bros.

Significant Infrastructure and Investment in C-Band today

Current users and providers have invested $10B through 2020

- Over 500 transponders on 21 US satellites[a]
- 6 Broadcast Networks[b]
- Over 415 Cable Networks[c]
- Over 10,000 cable headends and 1,000 broadcast stations, each with multiple C-Band antennas and equipment investments
- Over 500,000 C-Band DTH subscribers
- Over 3,500 Hotels with C-Band antennas
- Over 3,000 SMATV locations with C-Band antennas

[a] domestic satellites from 72° - 139° W.L.
[b] ABC, CBS, FOX, PBS, UPN, and WB
[c] 308 basic cable networks; 85 regional cable networks; 24 premium cable networks
Source: FCC 2002 Video Competition Report, and Broadcasting and Cable Factbook 2002-2003, pg. F-68.

Coalition Objectives

Maintain current high quality and service levels to continue to meet consumers' expectations

Understand how UWB and unlicensed devices may co-exist with C-Band with minimal risk of disruptive interference

Engage third party for technical testing

Proposed Technical Assessment

Utilize third party laboratory to model, simulate, quantify and demonstrate the "real world" effect of UWB and lower adjacent band unlicensed devices on C-Band reception.

Proposed Methodology and Procedures

- FCC Coordination
- Identify Equipment Under Test (LNB's, RX's)
- Define Interference Environment
- Test Available UWB and Lower Adjacent Sources
  - e.g., Time Domain PulsOn200; Part 15 wireless waveforms
- Model RX's, LNB's
- Validate Models vs. Test Results
- Simulate UWB Signals and Lower Adjacent Environments
- Evaluate Results

Assumptions of C-Band Environment

UWB Emissions
- Dithered and Undithered

Lower Adjacent Band
- e.g., typical Part 15 wireless waveforms

Aggregate Interference Environment
- Independent, uncorrelated sources
- Pulse Repetition Frequency (PRF) and Phase are random variables
- Receiving environment
  - random spatial distribution of sources

Summary

Engage third party to conduct lab testing of C-Band performance with UWB and unlicensed devices

FCC feedback

Identify FCC point person for Coalition's follow-up